Gateway

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The ARRL Packet-Radio Newsletter

NNC UPDATE

We received the latest NNC update from Lyle Johnson, WA7GXD.

"The 'final' prototype PC boards were fabricated and a sample supplied for assembly. I finished assembling it and performed preliminary testing. So far, everything works!

"Both async ports (CONsole and AUXillary) send and receive data. The operating system boots and runs. All four HDLC ports have been exercised at 76.8 kbaud in a polling environment and work flawlessly. The parallel port, with supporting circuitry on board, properly drives the OkiData 93 printer using Mode 2 interrupts on the CPU.

"The floppy boards are now being delivered to TAPR for the Alpha and Beta testers. The digital board is undergoing electrical test, and a misalignment in the plotting on an inner layer in the board is being corrected at the CAD facility. Most parts are in hand for the test units.

"About half the people who volunteered have returned the letters of agreement to participate in the testing. If you have received a letter, please sign it and return it, or send me a note acknowledging receipt if you decide not to participate. I really need to hear from you!"

From WA7GXD

UTAH-CALIFORNIA LINKED

On late Tuesday afternoon (3-25-86), Northern Utah was linked to California. The final link was the WA7GTU-2 digipeater in Central Utah. The equipment used was provided by UPRA (Utah Packet Radio Association) members.

The link route to use into Salt Lake City is as follows:

Site	Call
Salt Lake City	K7EA-1 or WA7YAZ
Provo	KD7YK-1
Central Utah	WA7GTU-2
Cedar City	N7HQK or WA7GTU
Blowhard Mt.	WA7GTU-1
Las Vegas	K7WS-1 or K7WS-2 or WA7HXO-3
Big Bear	AA6TN-1
California	W6AMT-2 or W6AMT-3

This link and call signs will probably change slightly as the link route evolves. Next steps are to Denver and Boise.

From N7BHC

DAYTON HAMVENTION

Packet radio will again be well represented at this year's Dayton HamVention on April 25, 26 and 27. The packet-radio forums will be held on Friday, April 26th from 1 P M until 5 P M in room 1. If you are interested in attending the informal packet get-together on Saturday night, or the Malibu Grand Prix, stop by the TAPR booth (booth number 448) for information. Rumor has it that the driver with the best time will receive a free LSC-10.

1300-1455 PACKET RADIO FORUM I

Packet Radio Fundamentals and Tutorial

Bob Neben	K9BL	Introduction (5 min)
Pete Eaton	WB9FLW	Packet Fundamentals (75 min)
Jon Bloom	KE3Z	ARRL & Packet Radio (30 min)

1500-1700 PACKET RADIO FORUM II

Packet Radio Technical Developments

Lyle Johnson	WA7GXD	Update on TAPR (60 min)
Harold Price	NK6K	PACSAT Update (60 min)

WA2FTC

BBS/GATEWAY LIST

The following stations run BBSs of one nature or another. All are linked by way of automatic forwarding.

W1AW-4, Newington, CT (ARRL HQ station)
K1BC, Lexington, MA (145.09/221.11 GateWay)
N1DL, Sudbury, MA (145.01/14.105 GateWay)
KE1G-1, Goffstown, NH
W1GOH, Brookline, MA
N1DKF, Cranston, RI (145.01/221.11 GateWay)
WB1DSW, E. Kingston, NH (145.01/14.103 GateWay)
WA1LRL, Brighton, MI (VHF/14.107 GateWay)
KA1MGO-1, Salem, NH
KD1R-1, Milton, VT
W1ZHC, Mattapoisett, MA
N2AYY-1, S. Glens Falls, NY
KC2FF, Tampa, FL
WA2FTC-1, Newington, CT (HF/VHF GateWay)
WB2MNF, Medford, NJ
AI2Q, Freeport, NY

WA2RKN-2, Hyde Park, NY
WB2RVX, Pennsauken, NJ
WA2SNA-1, Wayne, NJ
KC2TN, Atco, NJ (HF/VHF GateWay)
WA2VKH, Carlstadt, NJ
W2VY-1, Union, NJ (145.01/145.05 GateWay)
N2WX-1, Palm Bay, FL
KC3BN, Harrisburg, PA
KC3BQ, Skaneateles, NY
WB3EYB, Harrisburg, PA
K3GYS, Atco, NJ
W3IWI, Clarksville, MD (145.01 / 145.05 GateWay)
K3MC, Pittsburgh, PA
AK3P, Hummelstown, PA
K3PGB, Roslyn, PA
KS3Q, Baltimore, MD
WA3QFN, Margate, FL
K3RLI, Wilkes Barre, PA
W3TMZ, Mount Airy, MD (HF/VHF GateWay)
W3VH, Arlington, VA
K3VPZ, Granite, MD (HF/VHF GateWay)
KE3Z, Middletown, CT
K4AHO, Orlando, FL (HF/VHF GateWay)
WD4BRF, Stuart, FL
N4CI, Atlanta, GA
KB4CIA, Port Charlotte, FL
K4EID, Knoxville, TN (HF/VHF GateWay)
K4ICT, Macon, GA
KF4JF, Hahira, GA (VHF/14.107 GateWay)
NK4K, Miami, FL
W4KAU, Cohutta, GA
KD4NC, Sweat Mtn., TN
K4NGC, Woodbridge, VA
K4NTA, Stuart, FL (VHF/14.107 GateWay)
KA4NOF-1, W. Palm Beach, FL
KC4OI, Powell, TN
K4OZM, Orlando, FL
K4OZS, Ocala, FL
AA4RE-1, Gilroy, CA
WX4S, Johnson City, TN
WA4SZK, Florence, SC (HF/VHF GateWay)
K4TKU, Miami, FL (HF/VHF GateWay)
KI4XO, Marietta, GA (VHF / 14.107 GateWay)
WB4ZNW, Moultrie, GA
WB5BBW, Houston, TX
N5EDH, Camp Verde, AZ
WD5GAZ, Houston, TX (HF/VHF GateWay)
WB5JLI, Houston, TX
WA5MWD, Garland, TX
WA5RAX, Bessemer, AL
N6IIU-1, Palo Alto, CA
W5XO, Gausse, TX (VHF / 14.107 GateWay)
W6CUS-1, Richmond, CA
WA6ERB, Lakewood, CO (HF/VHF GateWay)
KD6SQ, Rancho Cucamonga, CA (HF/VHF GateWay)
KE7CZ, Dewey, AZ (HF/VHF GateWay)
WB7DCH, Enumclaw, WA (HF/VHF GateWay)
WA7MBL, Logan, UT
K7PYK, Scottsdale, AZ (VHF / 14.107 GateWay)
WB7QWG, Westfield, IN
N8BMA, Detroit, MI (145 / 220 GateWay)
KJ8C-1, Holland, MI
KB8CI, Cleveland, OH (VHF / 14.107 GateWay)
WA8EJH-2, Bloomington, IN
N8FJB, Harpers Ferry, WV
WB8LVP, Poland, OH (VHF/14.103 GateWay)
WB8WGA, Gahanna, OH (HF/VHF GateWay)
WB8WKA, Southfield, MI
WA8URE, Grand Rapids, MI
AD8Y, Ann Arbor, MI
KA9BEN, Sterling, IL
WB9CNE, Indianapolis, IN
N9CZA-1, W. Lafayette, IN
NI9D, Brookfield, WI (VHF / 14.107 GateWay)
WB9FLW, Edwardsville, IL (VHF / 14.107 GateWay)
K9JA, Urbana, IL
K9JRI, Indianapolis, IN
WB9MJN, Naperville, IL
WA9WQS, Anderson, IN
W9ZRX, Westfield, IN
KØHOA, Colorado Springs, CO (VHF / 14.103 GateWay)
WAØJFS-1, Des Moines, IA
KCØJ, Battle Creek, IA
NAØP, Ames, IA
KIØQ, Ames, IA (HF/VHF GateWay)
KCØQJ, Walsenburg, CO (VHF / 14.107 GateWay)
WAØRJT, Cedar Rapids, IA
WØRLI, Westford, MA (145.07 / 14.107 GateWay)
WØRLI-1, Westford, MA (145.07 / 221.11 GateWay)
NAØS, Ames, IA
KØVLD, Greely, CO
AIØZ, Roland, IA
LA6OCA, Skien, Norway (VHF / 14.105 GateWay)
LA6TBA, Oslo, Norway
VE3FXI, Ottawa, ON
VE3GYQ, London, ON (VHF / 14.107 GateWay)
ZF1GC, Grand Cayman Is.

Via WØRLI

DIGITAL COMMITTEE MEETING

The Ad Hoc Committee on Amateur Radio Digital Communication met in Orlando, FL on March 8 to discuss current packet-radio issues. The following are highlights of the meeting.

1) FCC PR Docket 85-105 Report and Order

The discussion opened with a synopsis of the situation by Paul Rinaldo. He pointed out that, as written, the restrictions specified in the Report and Order apply to all amateur operations, not just digital modes. Twenty Petitions for Reconsideration have been filed with the FCC.

A primary concern of the Commission is undetected use of the amateur packet-radio network by commercial interests. Harold Price expressed a fear that, since the subject of an audit trail was introduced by the League, the Commission may decide to require such a record for network monitoring. Mr. Rinaldo replied that in talks with the Commission, the point was made that this kind of monitoring would occur without need of a specific FCC-imposed requirement.

President Price, Executive Vice President Sumner and Washington Area Coordinator Williams visited the Commission on February 27 to discuss the subject. The next day, the League filed a Petition for Extraordinary Relief for packet radio above 50 MHz using AX.25 protocol. Harold Price asked whether or not specification of a protocol set a bad precedent. Mr. Lockhart wondered how this affected the users of Vancouver protocols. Mr. Rinaldo said that the FCC had recommended that the petition for relief be as specific as possible and not ask for more than we need to continue operation of the packet-radio network. In addition, specifying AX.25 in the petition would preempt any possible Field Operations Bureau objection that they would be unable to monitor transmissions.

Mr. Fox asked whether or not V-2 could be considered an AX.25-compatible protocol for the purposes of this petition. Mr Quiat recommended against asking the FCC for an interpretation of

that question. Mr. Price reminded the Committee that the Commission's expressed concern was with monitoring of amateur packet transmissions, which would be problematic with regard to V-2. Mr. Rinaldo pointed out that it was a practical concern that the FOB be able to (a) read the transmissions and (b) identify the stations in communication, using off-the-shelf TNCs they could buy. Not many TNCs support V-2 (in addition to AX.25) anymore, and it is not possible for FOB to identify the stations as V-2 does not include call signs in the frame header; virtually no one is using CW IDs any more. Mr. Price suggested that the League publish that it was not the League's intent to have the FCC write AX.25 into the permanent rules.

Dr. Magnuski asked whether, in light of the questions of the definition of third-party traffic raised by this action, the Commission should attempt to define by example what is, and what is not, third-party traffic. Mr. Rinaldo replied that, besides being a difficult thing to do, it would be better not to ask the FCC at this time.

2) Congestion Reduction

Mr. Rinaldo reminded the Committee that this subject was discussed at the previous Committee meeting. At the January ARRL Board Meeting, a motion was made that the Digital, VHF/UHF and Membership Services Committees study the existing band plans with an eye toward increasing the spectrum available for packet- radio operation. The Committee members were requested to write to the Chairman with their recommendations, which will be used to draw up recommendations to be forwarded to the other Committees and subsequently to the Board.

Mr. Fox pointed out that the frequencies specified in his paper for the 5th Computer Networking Conference were drawn from discussions with The Middle Atlantic Repeater Council (TMARC). Some of these frequencies were subsequently coordinated for other users. Mr. Linstruth said that frequency coordination was always left to the local coordinators. Mr. Rinaldo replied that we need at least a packet-radio band plan. Mr. Fox asked why not simply state that the available frequencies need to be better utilized. Mr. Price said he thought that the available frequencies are sufficient with proper user education. Mr. Rinaldo asked if that meant that the current 145.0-145.1 MHz band is sufficient. Mr. Johnson pointed out that the use of full-duplex systems was not addressed by specifying that narrow range of frequencies. Mr. Rinaldo replied that the Committee should make it clear that the existing full-duplex repeater pairs may be coordinated for packet use.

Mr. Price suggested that QST articles would help to educate users about frequency usage. Mr. Johnson volunteered to write such an article. Dr. Magnuski pointed out that a capability to monitor the network is essential if the problem is going to be clearly defined, and part of the problem was improper adjustment of equipment, which includes modulation levels and TNC parameters. Mr. Rinaldo wondered if an activity analogous to the "FM clinic" that used to be popular at hamfests would help solve the problem. General approval of that concept was expressed by the Committee. Mr. Price expressed a need for training aids and suggested that the Committee generate a list of such aids for use by local clubs.

In the area of higher-speed packet-radio hardware, Mr. Rinaldo noted that the Committee cannot dictate solutions to industry. Mr. Price stated that the Committee could, however, aid manufacturers by advising them on the market demand for devices. Mr. Rinaldo added that amateurs, particularly TAPR, have already removed some of the risk in manufacturing packet equipment by offering proven designs. By extension, this could be carried over into high-speed modems.

Mr. Rinaldo recapped modem discussions at the Committee's last meeting. Cleary, 9600-bit/s modems are needed. Equally clear is that even higher speeds, eg 56 kbit/s, will be needed soon. While current TNCs will support 9600 bit/s, TNC development will be needed, and must parallel the development of 56-kbit/s modems.

On a related topic, Dr. Magnuski reported on some developments in 9600-bit/s modems that make use of voice-grade channels. Current Rockwell chip sets are priced at $270, but there may be a substantial drop to the $50-100 price range when the modems are integrated into a single chip. Mr. Karn pointed out that this kind of 9600-bit/s scheme would have the advantage of working with an unmodified FM voice radio. Dr. Magnuski will keep the Committee advised of price changes and results of on-air tests.

3) Networking and Transport Protocols

Mr. Karn reported on his Xerox 820 implementation of the ARPANET Internet Protocol Suite, which includes Internet Protocol (IP) with all options, Transport Control Protocol (TCP), User Datagram Protocol (UDP) and a rudimentary Field Transfer Protocol (FTP).

Mr. Fox reported on the implementation of a virtual-circuit networking protocol using a TAPR TNC 2 (or clone) by Howie Goldstein, N2WX.

Messrs. Karn and Fox were requested to supply more- specific progress reports on these significant developments.

4) Message Transfer Protocol

A message-transfer protocol proposed by Jack Sanders, NC4E had been given to Committee members who attended the last meeting. The the Committee acknowledged that there was some fresh interest in such a protocol for NTS traffic. Mr. Linstruth said that he has sent software to active ARES stations to evaluate and that he was interested in leading the evaluation of this protocol. (Subsequent to the meeting, Mr. Linstruth said that he would work with Mr. Sanders and David Cheek, WA5MWD, who is also interested.)

5) Next Committee Meeting

Mr. Rinaldo asked that the Committee consider a long-weekend meeting in Newington prior to the next Board Meeting. After discussion, the weekend of June 14-16 was selected.

6) International Issues

Jeff Ward, GØ/K8KA, (former editor of Gateway) an

observer at the meeting, reported on the regulatory problems with packet radio in the UK. In brief, they are: (a) repeaters are strictly controlled in the UK, and there is no allowance for digipeaters; (b) amateur-to-amateur traffic is allowed, but point-to-multipoint transmissions fall under the UK definition of impermissible broadcasting;
(c) no 2-meter frequencies are available for packet, and all higher-frequency bands are shared with other services.

From W4RI

DUAL-PORT DIGIPEATER

The Mount Ramapo packet radio group in Northern New Jersey has converted the WA2SNA-2 digipeater over to a dual-port machine. The two port system runs on a Xerox 820, with the second port operating at 1200 bauds on 221.01 MHz. Although there is still work to be performed on the RF side of the machine, early reports indicate that the signalcan be copied at WB2RVX in Southern New Jersey.

From K2BJG

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